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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,832	03/18/2004	Toshiyuki Takewaki	PRM-00201	7022

7590 11/09/2004

Patent Group  
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53 State Street  
Boston, MA 02109-2804

EXAMINER
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FENTY, JESSE A

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 11/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/803,832	Applicant(s) TAKEWAKI ET AL.	
	Examiner Jesse A. Fenty	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2004.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 8-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-19 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>03/18/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Group II, claims 1-7 in the reply filed on August 18, 2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 8-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was made **without** traverse in the reply filed on August 18, 2004.

### *Drawings*

3. Figures 10A – 11B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

*Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Harada (US 2004/0124532).

In re claim 1, Harada (Fig. 7) discloses a semiconductor device, comprising:

An interconnect layer (102) provided on a semiconductor substrate;

A protective film (109, 110) provided on said interconnect layer; and

An electrode pad (111, 112) provided on said protective film,

Wherein said semiconductor device comprises an anti-oxidizing layer (108) containing a different element (Ti) which is different from an element contained in said interconnect layer, said anti-oxidizing layer being disposed between said interconnect layer and said protective film.

In re claim 2, Harada discloses the device of claim 1, wherein said interconnect layer is a copper-containing metal (section [0090], line 18).

In re claim 3, Harada discloses the device of claim 1, wherein said different element is a metal having lower oxidation-reduction potential than that of a metal contained in said interconnect layer.

In re claim 4, Harada discloses the device of claim 3, wherein said different element is a group IV element.

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In re claim 5, Harada discloses the device of claim 4, wherein said different element is Ti (section [0092], lines 1-2).

In re claim 6, Harada discloses the device of claim 1, wherein said protective film (109, 110) includes a Ti layer or a TiN layer (section [0092]).

6. Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Harada (U.S. Patent No. 6,777,811 B2).

In re claim 1, Harada (Fig. 7) discloses a semiconductor device, comprising:

An interconnect layer (102) provided on a semiconductor substrate;

A protective film (112) provided on said interconnect layer; and

An electrode pad (113, 114) provided on said protective film,

Wherein said semiconductor device comprises an anti-oxidizing layer (109) containing a different element (Si) which is different from an element contained in said interconnect layer, said anti-oxidizing layer being disposed between said interconnect layer and said protective film.

In re claim 2, Harada discloses the device of claim 1, wherein said interconnect layer is a copper-containing metal (column 9, lines 65-66)).

In re claim 3, Harada discloses the device of claim 1, wherein said different element is a metal having lower oxidation-reduction potential than that of a metal contained in said interconnect layer.

In re claim 4, Harada discloses the device of claim 3, wherein said different element is a group IV element.

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In re claim 5, Harada discloses the device of claim 4, wherein said different element is Si (column 10; lines 8-9, 63).

In re claim 6, Harada discloses the device of claim 1, wherein said protective film (112) includes a TiN layer (column 10, line 24).

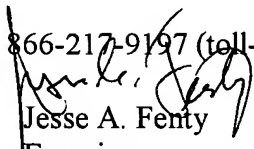
In re claim 7, Harada discloses the device of claim 1, wherein said anti-oxidizing layer is a layer where the upper part of said interconnect layer is modified, and comprises said different element and an element contained in said interconnect layer.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse A. Fenty whose telephone number is 571-272-1729. The examiner can normally be reached on 5/4-9 1st Fri. Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jesse A. Fenty  
Examiner  
Art Unit 2815